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THE MEDICAL MANAGEMENT OF INSANE WOMEN.

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and Surgical Journal.]

II. ADVISORY MEDICAL BOARDS REQUISITE AT ASYLUMS.

In one of the April numbers of this JOURNAL for the present year,* a series of papers was initiated upon the causation, nature and more rational treatment of insanity in women. My remarks were based, it was stated, upon extended observation, patient reflection, and a firm belief that the subject, though hitherto neglected, might be made to afford in practice important results. The few months that have since elapsed have been strongly confirmatory of every assumption then made; additional cases of the kind alluded to have been sent to me for examination and for treatment, and my views have been endorsed by gentlemen much older in the profession as in accordance with their own experience; and I acknowledge with pleasure the cordiality with which my attempt to elucidate a question among the most delicate and withal among the most important of those pertaining to obstetrics, has been so generally received.

The ground I have taken regarding this subject, is briefly the following:

1. That the insanity of women is, in a large proportion of cases, of reflex character and origin.
2. That in by far the majority of these, it is unattended by organic cerebral change; and therefore,
3. That like all other of the manifold reflex disturbances of women, it may be prevented, treated, cured by medical and surgical means.

Upon the above as a basis, I have now to offer certain practical suggestions concerning both the public and the private management of insane women. Of these, but a single one will be considered in the present communication.

* April 7, 1864, p. 189.

To the point alluded to I have already called the attention of the profession at the late meeting of the American Medical Association at New York; my remarks being embodied in a paper upon "The Relations of Female Patients to Hospitals for the Insane." This communication, having received the commendation of the Section of Practical Medicine and Obstetrics, was by it presented to the Association in Committee of the Whole, with the result of unanimous approval, the resolutions passed by the Association being as follows:—

"*Resolved*, That in the opinion of the American Medical Association, it is expedient that there should be attached to every public hospital for the Insane, one or more consulting physicians, who may be consulted at the discretion of the Superintendent; such measure being for the interest of the hospital, its medical officers, and its patients.

"*Resolved*, That a copy of the above resolution be transmitted to the Board of Trustees of each of our public hospitals for the Insane, and also to the Secretary of the Association of American Superintendents, with the request that it may be endorsed by that body, and the act proposed be urged upon the respective boards with which its members are officially connected."

It is the object of the present paper summarily to explain the advantages and necessity of the proposed measure, as comprising part of a systematic and more rational treatment of insane women; premising that with the single exception of Dr. Ray's most excellent institution at Providence, there is no asylum in this country provided with an advisory board. The so-called medical visitors attached to the Hartford Retreat are not appointed with reference to special professional consultation, while at the McLean Asylum, as is also the case at Bloomingdale, the consulting physicians and surgeons attached to the general hospital, have nothing whatever to do, officially, with the insane department. If any of these gentlemen have ever been called upon for advice, it has merely been as an act of courtesy and not as a right. They have not been selected with reference to any pre-eminence in this specialty, and they would probably none of them lay the slightest claim to be considered "expert" regarding insanity.

The advantages, as regards female patients, of an Advisory Board of Consulting Physicians at Insane Asylums would, I conceive, be several; applying—

- I. To the patient,
- II. To the Hospital,
- III. To the Superintendent,
- IV. To the Profession, and
- V. To the Community.

I.—The benefit of an advisory board to patients will, in the case of females, be found to be extreme. My assumptions as to the nature and truly reflex character of the larger proportion of their psychopathological manifestations being granted, as must be done by

every observer who has carefully studied these cases obstetrically (and this is the touchstone to which all the diseases of women must be subjected). it follows that, for the purposes of proper diagnosis and of successful treatment, the usual measures resorted to at asylums in the case of insane women are wholly inefficient. To efface the effect in these cases present, we must reach its cause—persistent and active, in some instances even more active, after the world with its cares and its turmoil has been shut out. Seclusion does not restore a displaced womb; absence from friends, except in some cases from a husband, does not cure an inflamed or ulcerated cervix; the prohibition of letter-writing will not control suppression or redundancy of the catamenia, nor a rigid diet the vagaries of an irritable ovary. What is required is that the case, whenever doubtful, should be carefully examined and thoroughly understood. This, as our asylums are at present conducted, and speaking in more than general terms, is never done with the female patients; it is not even attempted. The reasons of such seeming negligence I proceed to explain, and to suggest its cure.

The medical examination of an insane woman is not always easily made; and at an asylum is attended with certain risks to the medical attendant, existing in private practice with insane patients, unless due precautions are taken, but enhanced at asylums. I refer to the chance that the examination may appear to the patient's disordered mind a very different piece of business from what it is; and that it may be so reported to other patients and to her friends. Perhaps, indeed, the misconception may remain a sincere and persistent belief, even in case of eventual cure. These risks are in reality, as things now exist, far more tremendous than might be imagined; but when the charges are recollected that time and again have been made and pressed to trial in the courts by females whose delusions have been merely the effect of the transient administration of an anæsthetic,* it will be seen that with women who are really and permanently insane the danger is increased.

How can these difficulties, these risks, be avoided and overcome? So far as mere objections of the patient are concerned, or her forcible resistance even, etherization is sufficient, or merely the narcotization still so common for purely therapeutical ends in our asylums; but for protecting the medical officer's reputation and that of his hospital, no measure that has been or can be proposed will suffice, save an advisory board for medical consultation. I know that examinations may be attempted in the presence of junior medical officers or of a matron, but these are all parties of identical interest with the Superintendent; they are his subordinates, usually dependent for their places upon his good will, and therefore their presence

* For cases in point, that of Dr. Beale, of Philadelphia, and others, I refer to this Journal, Nov. 1858, p. 287; Philadelphia Medical Examiner, December, 1854; Western Law Monthly, April, 1860, p. 183; Wharton & Stilles's Medical Jurisprudence, 418, § 443.

and their evidence are without that moral weight which can alone be protective to such an examination as is required.

There has widely obtained an opinion, still existing to a certain extent as must be allowed by every candid observer, that asylums for the insane are rather houses of detention than hospitals for cure; an idea based upon the prison treatment and discipline of these institutions in former days. Everything that can be done to disabuse the public of so great an error, or to prevent its having the slightest foundation in fact, is in every respect well worthy our attention. For a large class of their patients, probably on the average fully one half, how can asylums be hospitals for cure, if the first step towards ascertaining the predisposing and exciting cause and true character of the mental disease is never taken? The apprehensions concerning the unnecessary or wrongful detention of female patients that have so often found vent in our journals and in the public courts, have generally been without reason or even show of reason as regards intentional wrong. Superintendents, there is every ground for believing, are men of honor, anxious to do their whole duty, and above fear or favor. But are there no reasons for fearing that in many, perhaps in all our asylums, female patients may occasionally be unintentionally detained, whose cases admit of relief or cure? The answer is evident enough from the statements already made, from the admissions of Superintendents themselves, from the results of similar cases in private practice to whom, unlike those in asylums, appropriate treatment has been applied, and from those instances of cure, however rare, that from time to time have spontaneously and accidentally occurred at asylums, where after many years, perhaps of no improvement at all, the grand climacteric has been passed, or a tumor become checked in its growth, or an old and indolent pelvic abscess found vent, or the long-checked catamenial fountains again obtained for themselves effective discharge, and the mental disturbance that had been dependent upon the central lesion has disappeared. Such cases have been put upon record, but their true value and importance have not been recognized.

The public apprehensions to which I have alluded have some influence, how much or how little none of us can well appreciate, in preventing the sending of patients to insane asylums. Now it is conceded by all familiar with the subject, that the cure of every form of insanity, secondary and reflex, as well as primary and organic, depends in a great measure upon the earliness of the period at which proper treatment is commenced. Asylums are, or certainly should be, essentially hospitals for cure. Everything that we can do to make them so is a threefold advantage to the patient; it increases her chance of being sent at all to the institution by her friends, of being sent sufficiently early, and last, but not least important, of her being treated *secundum peritissimam artem*.

II.—I have said that by a consulting board taken from gentlemen

in private practice, and therefore familiar with the details of obstetric or gynæcal management, these various difficulties as regards doing the best for the welfare of female patients would be likely to be overcome. Would it not also be of decided advantage and aid to the superintendent, looking at the question as it involves his best interests alone, and putting aside the satisfaction that would naturally accrue from the feeling that everything was being done for his patient that could be suggested by science or art? We are all of us familiar with the vexations to which of late years our own superintendents have been constantly subjected in courts of law. In the cases to which I refer, many gentlemen have been summoned from civil practice to give testimony for or against the managers of asylums. In a portion at least of these instances, there is reason to believe that there has existed one or another form of functional uterine or ovarian derangement which, had its existence and character been accurately determined, might of itself have thrown such light as satisfactorily to settle the question of sanity or insanity, of detention or non-detention, of permanent disability or of cure. In such a case were the disease to have been detected and properly treated, it is probable that the delusions involved might have been made to permanently disappear, and an immense amount of scandal and professional disparagement avoided.

These are questions of direct interest to the profession as well as to any individual superintendent. Gentlemen have more than once acknowledged to me that they felt strongly tempted to retire from a position they had filled with usefulness and honor, merely because of the annoyance to which they were thus periodically subjected; and in case of a vacancy arising at any hospital, as has lately been the case at Northampton, it becomes a matter of vital importance to a candidate for him to decide whether he will voluntarily encounter the almost certain ordeal at law, to which he may be subjected by any one of the richer class of his female patients.

To superintendents the appointment of an advisory board would prove at once comfort, assistance and safeguard. The probability of this was most courteously allowed by Drs. Tyler of the McLean Asylum, Walker of South Boston, Jarvis of Dorchester, and Choate of Taunton, at the hearing granted the Commission in Insanity during the session of the Legislature of Massachusetts just ended; and its realization in practice was affirmed on the same occasion by Dr. Ray, of Rhode Island—the only superintendent in this country, from having an advisory board, placed in a position to express a competent opinion concerning his female patients. One of the members, indeed, of that very board, Dr. Mauran, of Providence, took occasion at a subsequent period, during the late session of the American Medical Association at New York, to express in the most unqualified manner, from actual and extended experience, his approbation of the measure now proposed. Its necessity is indeed so palpable

that we may well wonder that the change has not long since been effected. That it is still to be accomplished alone necessitates any extended argument.

I might easily adduce still further evidence of the character of that now given, but will content myself with a single line. In a letter dated August 3d ult., Dr. John S. Butler, the accomplished Superintendent of the Retreat at Hartford, writes me as follows, concerning a patient now under my charge:—"I always suspected that there might have been some uterine irritation or disorder acting perhaps as the exciting cause, but under all the embarrassing circumstances of our relative positions, I could not satisfy myself. Situated as I am here, I could not make such an examination as was necessary for a full understanding of her case; you can much better insist upon one than I could."

Could any testimony be more conclusive than this?

III.—Are there advantages to the profession from an advisory board, over and beyond those that I have spoken of as accruing to the superintendents themselves? Even here it must be allowed that there is an affirmative answer.

At the present time there are outside the asylums very few gentlemen skilled in psychiatry, very few even who lay claim to being psychological experts. The truth of both of these statements is evidenced at every important trial that involves questions of mental unsoundness. Few in private practice have opportunity of directly comparing, upon any large scale, the various phases of insanity; few, therefore, become directly and specially interested in their study. At the present time, so great is the scarcity of experts, that the resignation or death of the superintendent of any large asylum strikes with dismay the board of trustees of nearly every other similar institution in the country, lest the new incumbent to be chosen should be stolen from themselves. This is no exaggeration; the writer happens within the present season to have been semi-officially consulted concerning a vacancy in one of our asylums, and he knows very well what names were sent to him for the expression of his opinion, and the remarks concerning them that were made to him by trustees who possessed for the time being the services of the gentlemen referred to.

Now I contend that the establishment of advisory boards would not only tend to stimulate physicians to more frequent study of mental disease; it would afford a larger field from which to select gentlemen to fill the responsible positions of superintendents and trustees. It is very evident that such would necessarily be the case. No physician would be likely to be appointed to the advisory board who, with fair reputation in general practice, had not shown some interest, be it more or less, in the special department now under consideration, and had not a certain amount of familiarity with the innumerable mental vagaries of nervous women. Opportunities would of course, from his position, be likely to become frequent for

further research, and the fascinations ever acknowledged to attend the study of mind diseased would tend to perfect him therein. As a single instance of what would naturally and generally be the result, it may be mentioned that shortly after the report of the late Massachusetts Commission in Insanity had been rendered, it was urged upon two of the three gentlemen constituting that board, that they should allow their own names to be used as eligible to the vacant superintendency of the Northampton Asylum; upon the third of their number similar arguments would have been used had he been a physician. It is unnecessary to add that in one at least of these instances, such position would have been incompatible with other though perhaps not higher aims; for I can conceive of no professional office with greater responsibilities, more constant call for all the elements of one's better nature, more opportunity for making a deep and grand mark upon the tablet of the time, than the superintendency of one of our New England Hospitals for the Insane.

It may be alleged that there are few men fitted to be chosen as medical advisers to an asylum. This remark is undoubtedly true, but it depends entirely upon the profession how long such general incompetence shall exist. Already a door has been opened to the needed reform by the establishment of Dr. Tyler's class at the Harvard Medical School, an example soon to be followed, we trust, at all the colleges in the country. Towards such recognition of the claims of mental disease upon the profession at large, the measure I now propose would greatly tend, and on the other hand the more thoroughly mental disease becomes understood, the more incomprehensible it will appear that this greatest of elements towards the understanding and efficient treatment of female insanity should have been so utterly and persistently lost sight of.

V.—To the community at large, need I say, the reform proposed is of incalculable importance. As a mere matter of political economy, and to prove the worth in dollars and cents of every productive worker restored to reason, there were presented by the late Massachusetts Commission in its report to the Legislature some startling calculations and conclusions respecting the results attainable and already attained.* The statements to which I have referred, prepared with the minuteness and accuracy for which he is so celebrated, by Dr. Jarvis, of Dorchester, were presented more especially with reference to the male sex; but as regards the cost of support, and the pecuniary gain to friends and the State effected by cure, they equally apply to the case of women; while the chance of cure in women, provided only the proper treatment be afforded, is probably much greater than in men.

I have spoken of doubtful cases of insanity in women, which of late years have largely occupied the time of our courts and have

* Mass. Senate Doc., 1864. No. 72, p. 5 et seq.

kept the public mind excited and troubled. The community would be benefited by the prevention of such trials or their more summary settlement, which can only be done by the advisory board now proposed.

I have referred to the danger of libellous charges against superintendents, in case they do their whole duty by the female patients entrusted to their charge. In the advisory board we have an efficient safeguard.

I have mentioned the increased confidence that would be felt in asylums should they be provided with such a board, and the larger proportion of female patients that would probably be sent for treatment at an earlier and more curable stage of the malady—in both respects a benefit being conferred upon the community—and the advantage that would accrue to it from a more general interest being taken in these diseases and greater proficiency in their treatment attained by medical men. Can we doubt that the board will soon be added to the management of every hospital?

In my communication upon this subject to the American Medical Association, I urged that the appointment should in every instance be an honorary one; as thereby tending to elevate the profession and the character of the services rendered. To my positions on this point, exceptions were taken by Dr. Griscom, of New York, upon the ground that physicians in private practice are at the best ill paid, and that by no one, more especially by the Association representing the profession at large, should action be taken tending to the establishment of further gratuitous labor.

While I strongly differed from the conclusions to which Dr. Griscom would press his argument, the resolutions originally offered to the Association were so far modified by passing this point in silence, as to leave it discretionary with trustees in each instance to pay or not to pay a salary to members of the advisory board; it will have been noticed that in this form the resolutions were unanimously passed.

In my own opinion, premising that the amendment of Dr. Griscom had been fully urged by him at the preliminary discussion before the Section of Practical Medicine and Obstetrics, and had been there rejected by a very large vote, the Section adopting and presenting the resolutions in the form first offered, as their own—in my opinion, I would still contend that these appointments should in every instance be strictly and purely honorary. I am led to this opinion by the following reasons:—

1st. Such appointments at ordinary general hospitals are always of this character; the only instance within my own personal knowledge in this country where consulting physicians or surgeons receive any emolument being at the General Hospital at Quebec—an example of short-sightedness on the part of its managers, or of par-

simony on the part of its attendants only equalled by the whole detail of management of the Provincial Lunatic Hospital at Beauport, near that city. To the utter failure of this last-mentioned institution, the only one in the Lower Province, to accomplish its end, I referred in my remarks before the Association. It is a subject to which I may allude in another communication, so necessary is it that the evil there existing should be exposed and abated.

If it is contrary to the ethics of the American Medical Association for physicians ever to give gratuitous advice in cases where a trifle could possibly be paid, then do we all of us who hold any honorary appointment at an hospital, daily and wittingly infringe the laws of that code; and we should all—among the number Dr. Griscom himself, one of the Physicians to the New York Hospital—be ignominiously expelled from the Association. That the gentleman referred to still holds his official position, and has not offered to resign it, is sufficient proof that his argument before the Association was so far fallacious as it was insufficient to control his own action in a matter similar to the case in hand.

2d. An honorary appointment is better for the interests of the hospital. Putting aside the fact that our public hospitals for the insane are in greater measure of a charitable character than remunerative, a large proportion of their patients being paupers, it is evident that the community, so sensitive upon the point of possibly unnecessary detentions, would be more at ease with an unpaid than a paid advisory board; there would seem less likelihood of collusion, more probability that its action would be fair and unbiassed.

3d. It is also better for the interests of the gentlemen composing the board. I acknowledge (as who does not?) the indirect advantages pertaining to an hospital appointment; that it is generally supposed to be conferred upon those by taste or previous education best fitted to fulfil its duties. But beyond these considerations, it is certain that the adviser who is unpaid at once holds a much more independent position, and that for this reason his dictum has much greater weight. Unpaid the position is much more likely to be unsought; and therefore, conferred, it gives the greater honor.

4th. And finally, an honorary appointment is also a better one for the community. Every salaried medical office is likely to become the object of contention and political intrigue, and therefore to be filled by incompetent persons. That such offices do from time to time happen to be occupied by the right men seems rather a matter of accident than of necessity, and in the nature of things it is hardly to be expected.

It should, of course, as I have intimated, be left entirely to the discretion of the superintendent in all cases as to when and to what extent such a board as I have suggested should be consulted by him; the object being to offer him every opportunity of curing his patients, without in any way shackling his judgment, and above all to

put it into his power to treat his female patients within the hospital as understandingly, as judiciously and as thoroughly as the same women would be treated were they sane and at their homes.

The above remarks are commended alike to the attention of superintendents, of trustees and of the profession at large. In my next communication upon the subject I shall enter into matters of stricter medical and surgical detail.

DR. GAILLARD'S PRIZE ESSAY ON OZONE; ITS RELATIONS TO
HEALTH AND DISEASE.

[Continued from page 198.]

WHEN considering the sources of ozone, it would seem reasonable to suppose that there should be but little of this agent manifested in city atmospheres, repeated experiments have proved that such is always the case. Here there is scarcely anything to generate ozone, and everything to consume it. In the country, or at sea, on the contrary, ozone is always relatively abundant. Ozonoscopes placed near a large sewer, in the city of Metz, were discolored (and then slightly) but four times in six months. A series of experiments at Koenigsburgh indicated similar results. Very interesting and important investigations have been instituted at Metz, Versailles, and Paris, for the purpose of determining the chief peculiarities of atmospheric air in inhabited places. The results are valuable and suggestive. Ozonoscopes placed in the halls and wards of hospitals gave no traces of ozone, whilst, placed on the exterior of the buildings, they manifested hues corresponding to degrees 7, 8, and even 10 of the ozonometric scale. These hospitals were in the most cleanly and perfect condition; well ventilated, and manifesting no perceptible odor on entering them. Ozonoscopes were placed in the halls for the wounded, on the ground floor and in the rooms, where the windows were opened twice a day, and in which were placed not more than eighteen or twenty patients. In the wards for venereal and fever patients, where the same influences existed, ozonoscopes were also placed, the hygienic relations being equally good, and the thermometer in all instances not exceeding 60 F. Rooms were also selected, for these experiments, where the windows were kept always (by day) open. The ozonoscopes, judiciously arranged in all of these places, remained *in situ* for fifteen days, and exhibited no change whatever; there being not even a trace of ozone present. In a large and well-ventilated ward, once occupied by scorbutics, but which had been vacated for a month, the ozonoscopes manifested hues similar to those given on the exterior of the building; 7, 8, and 10 of the ozonometer.

These experiments were conducted with ozonoscopes furnished by M. Schönbein, and of course were perfectly reliable. The experi-

ments at Metz were conducted by M. Scoutetten; those at Versailles, by Bérigny; and those at Paris, by Silbermann. At the Conservatory of Arts and Sciences, at Paris, Silbermann obtained no traces of ozone; whilst Bérigny, at Versailles, with the same ozonoscopes and at the same time, obtained hues corresponding to the highest degrees of the ozonometric scale.

These very interesting facts prove the effect of city atmospheres and the dwelling together of human beings, upon the formation and destruction of this vital and important hygienic agent. They suggest the imperative necessity of out-door existence; the danger of neglecting this; the unhealthiness of city atmospheres, and the true reason for the recuperative effect of country air. When physicians have been asked the true cause of this invariable benefit from country air, the reply has usually been in praise of its purity, with a traditional allusion, perhaps, to the increased exhalation of oxygen there, from the growing surfaces of vegetation. The hitherto vague and unsatisfactory teachings of chemistry, in this connection, have been their only guides, and it is not surprising that the effect of all has been to make the subject as obscure and ill-defined to those asking the questions, as it has always really appeared to those undertaking to give the proper replies. Oxygen is really no purifier of the air, as decomposition is increased under its influences. We are now taught, that the chief reason for the value of country air is to be found in the constant existence there of this vital and indispensable agent; the very life and strength of the atmosphere to the invalid; the great purifier of nature.

The purifying properties of ozone are indeed marvellous. Scoutetten placed meat, already undergoing putrefaction, in ozonized air; "in five minutes it was completely disinfected." Being removed for a time, it again emitted an insufferable odor; reimmersed in the ozonized air, it again became pure. Manure and the drainage from the amphitheatre of the Metz Hospital, the whole in a state of decomposition, were subjected to the influences of ozonized air, and in a few minutes entirely disinfected. Ozone was diffused through a large room, containing heaps of manure, in a disgustingly offensive condition; the odor was so immediately destroyed, as to surprise all who were present. Dr. Andrews, of Belfast, has recently presented to the British Association for the Advancement of Science, a compound of chlorine and ozone, which proves to be a rapid disinfectant and deodorizer. Ozonized chlorine has been prepared, in the United States, by Dr. Darby, and perhaps others; it is, undoubtedly, very similar to the preparation presented by Dr. Andrews. M. Schönbein has demonstrated, that when putrefied organic matters are subjected to the actions of ozone, the odor is destroyed as long as the ozonoscope gives evidence of the presence of ozone; but as soon as the ozonoscope remains unaltered, the odor immediately returns. Nothing more conclusively than these experiments can demonstrate the highly disinfectant and deodorizing properties of ozone.

Before dismissing this part of the subject, it should be stated that there is a probability of error or inaccuracy in the experiments, tending to show that whilst ozone, in the atmosphere surrounding the hospital at Metz, gave abundant evidence of its presence by the ozonoscope, it seemed not to be present in the rooms of the hospital, where the windows were kept open during the day. Although these rooms were occupied, still, with the hygienic precautions mentioned, it is not reasonable to think that the air was so immediately and thoroughly vitiated, by its simple circulation through the rooms, as to lose *all* traces of ozone. Rooms that had been a month previously occupied by scorbutics, but then unoccupied, and with the windows always open, gave to the ozonoscopes hues corresponding to degrees 7, 8 and 10 of the ozonometer; we see thus, that circulation through a room is not sufficient to cause any diminution of ozone in atmospheric air. When windows are kept open all day, where cleanliness and ventilation are carefully observed, even if the rooms are occupied, circulation *alone* can scarcely rob such air of all of its ozone. We allude to this, because the position taken is somewhat an extreme one, and because the experiments, in this connection, are not sufficiently numerous to establish it conclusively. Dr. Gregory states, on this subject, that M. Schönbein "found that in storms, when the electric discharge took place at a great distance from where he was, he could often instantly detect ozone; although within four walls, and although previously the paper was quite unaffected." This statement of Dr. Gregory would go to prove, that simple circulation through the *open rooms* of an inhabited house does not render such atmosphere less vitalizing and healthy than that which circulates without the house; that it does not *deprive* it of its ozone. The experiment made with the atmosphere of the hospital ward, in which a month previously scorbutics were placed, but which was at the time of the experiment open and well ventilated, goes to show that circulation of the atmosphere, through rooms in this condition, does not even *diminish* the amount of its ozone. It would be more prudent to demand farther proof before assuming that atmosphere circulating through clean and well ventilated rooms, the windows of which are open all day, is deprived of its ozone from the simple fact that these rooms are occupied by a few persons.

These points are prominently mentioned and *discussed*, on account of the wide-spread error which prevails upon the subject, that the simple entrance of atmosphere into an inhabited house deprives it of its ozone.

A chief part of the basis of Dr. Fountain's argument, to prove that ozone is nascent oxygen, consists of this undoubted fallacy, "that ozone is not found within doors, except in very slight traces, and generally not at all, however well ventilated the building may be." The experiments at the hospital at Metz by M. Scoutetten, those at Versailles by Bérigny, and the declarations of M. Schönbein, on the authority of Dr. Gregory of Edinburgh, not to mention

other authorities, we certainly think prove to us that this *general* impression is groundless, and such a statement an utter fallacy. Granting it to be true, however, it only proves how very poisonous the unventilated dwelling must be when we see such results characterizing rooms that are ventilated; how dangerous to health the unwatched associating of human beings together must frequently be; and what a generator of disease and death all city atmospheres inevitably become.

The agency of ozone, in the prevention or production of disease, has been assailed on the ground that this agent is not present in sufficient quantity for accomplishing the results claimed. It is needless to say that these objections were only made before the great natural sources of ozone had been indicated, and that, at present, its existence, in quantities more than sufficient for the accomplishment of such results, is no longer denied. Seeing, then, that it were more than folly to deny its diffusion in all atmospheres, and having shown the stupendous scale on which it is ever being generated, we will proceed to consider its interesting relations to the existence of disease; and first, its relations to malarial diseases.

After all that has been written on this subject, the true nature of malaria is not yet understood. The theories of McCullough and Ferguson, Dwight, Mitchell and others, have, so far, only served to make us confess a total ignorance in reference to the subject of which they each so interestingly wrote. This subtle poison we can only recognize in its effects; its cause, nature and essence are yet wrapt in the mists of a vague hypothesis; it is the toxic apocrypha; the mysterious hieroglyphic, which, transcribed by Nature's hand, has not yet found its Champollion. "It settles over thin and barren soils, and over wastes that have been from all times desolate; over places in which southern suns ripen delightful gardens, and about the sites of cities in which the pomp of palaces has passed away." Whether amid the majestic highlands of the Hudson, or the sunny everglades of Florida; the gold sparkling quartz-rocks of California, or the rolling prairies of Illinois; the fens of England, or the arid sands of Holland; the broken arches of Rome, or the ruined marbles of Greece; the pioneer cottages of Iowa, or the growing hamlets of Australia; its history is ever the same, its obscurity inilluminable. Malaria is a subject which the profession has everywhere to encounter; a subject which, carefully studied and scientifically investigated, in all latitudes, gives yet but one result—an unbroken record of failure and disappointment. Whatever its composition, however, it is quite sufficient for us that its existence in the atmosphere is incompatible with health, and that, in ozone, we recognize the agent which alone is able to neutralize and destroy it. Ozone is able to destroy malaria, for no deleterious substance is found in any atmosphere conspicuously manifesting its presence. Where ozone is, malaria is not; and where malaria is found, ozone

has been consumed. Being the most rapid oxidizer known, it is capable of destroying (as far as its supply goes) all the noisome and pestilential exhalations which generate idio- and koino-miasmata. It should be recollected, that ozone is generated in less quantities in dry atmospheres, and that its supply is less under high temperatures.

The deduction here is manifest. Ozone is elaborated at all seasons; but where poisonous emanations abound, it is largely consumed; where dryness and heat of atmosphere coincidently exist, the supply of ozone is small. Ozone, in summer, is elaborated, but poisonous emanations then most abound, and it is of course largely consumed; in summer, the dryness and heat of the atmosphere conspire to lessen the supply of ozone. The natural consequence of all this is, that where the consumption of ozone is increased and the supply diminished, it must at such times cease in a great measure to exist; and that we should suffer from the atmospheric poisons which most prevail in the absence of ozone. Among the most prominent of such poisons is malaria. Where malaria prevails and the ozonoscope remains unaltered, all of the diseases consequent upon malaria soon demonstrate to us the direct relation which ozone, manifestly, bears to malarial diseases. It follows, from the converse of this reasoning, that ozone should be greatest in winter, when its supply is largest and its consumption least; observation has proved that such is the case. Ozone, then, being least formed and most consumed in summer, when at the same time all pestilential and malarial exhalations abound, it is evident that countries which most generate such exhalations must be chiefly subject to the diseases which result from them, and that these diseases must prevail most in summer. The history of every country proves that such is always the case. It is known that though all soils are subject to malarial influences, such influences almost peculiarly belong to alluvial soils. It is therefore manifest why alluvial soils should be unhealthy, and why, when we have a coincidence of high solar heat with alluvial soil, malarial diseases should be malignant.

[To be continued.]

THE BOSTON MEDICAL AND SURGICAL JOURNAL.

BOSTON: THURSDAY, OCTOBER 13, 1864.

THE BRITISH ASSOCIATION. THE NATURE OF THERMAL WATERS.—The annual meeting of the British Association has become an event of great interest and importance to all scientific men, particularly to us in the United States, where science is no longer represented by our own National Society or by the American Medical Association. To it, therefore, and to kindred bodies in France and Germany, we look for information concerning the progress made from year to year both

in our own profession and in science in general, and we think it a matter worthy of immediate consideration, whether a fresher life and wider influence might not be given to our Medical Society by making it a part, or section, of one general National Association, which should comprise all branches of knowledge, and bring into a closer acquaintance our distinguished men of science. When we consider in fact the intimacy of the relationship which now binds our own art to other sciences, and its ever widening boundaries, we can well understand the fitness of the arrangement which in other countries thus unites under one common association all students of Nature in its widest sense.

The meeting this year was held at Bath, and the President, Sir Charles Lyell, prompted by the celebrated natural phenomena of the place, devoted a portion of his inaugural address to a consideration of the nature of hot springs, and the laboratory where our favorite mineral waters are manufactured by the wholesale. We would like to give in full this portion of the admirable address of this distinguished naturalist, but our space will admit of but a few extracts.

"One of our former presidents, Dr. Daubeny, has remarked that nearly all the most celebrated hot springs of Europe, such as those of Aix-la-Chapelle, Baden-Baden, Naples, Auvergne, and the Pyrenees, have not declined in temperature since the days of the Romans; for many of them still retain as great a heat as is tolerable to the human body, and yet, when employed by the ancients, they do not seem to have required to be first cooled down by artificial means. This uniformity of temperature, maintained in some places for more than 2000 years, together with the constancy in the volume of the water, which never varies with the seasons, as in ordinary springs, the identity also of the mineral ingredients which, century after century, are held by each spring in solution, are striking facts, and they tempt us irresistibly to speculate on the deep subterranean sources both of the heat and mineral matter. How long has this uniformity prevailed? Are the springs really ancient in reference to the earth's history, or, like the course of the present rivers and the actual shape of our hills and valleys, are they only of high antiquity when contrasted with the brief space of human annals? May they not be like Vesuvius and Etna, which, although they have been adding to their flanks, in the course of the last 2000 years, many a stream of lava and shower of ashes, were still mountains very much the same as they are now in height and dimensions from the earliest times to which we can trace back their existence? Yet, although their foundations are tens of thousands of years old, they were laid at an era when the Mediterranean was already inhabited by the same species of marine shells as those with which it is now peopled: so that these volcanoes must not be regarded as things of yesterday in the geological calendar.

"Notwithstanding the general persistency in character of mineral waters and hot springs ever since they were first known to us, we find, on inquiry, that some few of them, even in historical times, have been subject to great changes. These have happened during earthquakes which have been violent enough to disturb the subterranean drainage and alter the shape of the fissures up which the waters ascend. Thus, during the great earthquake at Lisbon in 1755, the temperature of the spring called *La Source de la Reine*, at *Bagnères de*

Luchon, in the Pyrenees, was suddenly raised as much as 75° F., or changed from a cold spring to one of 122° F., a heat which it has since retained. It is also recorded that the hot springs at Bagnères de Bigorre, in the same mountain chain, became suddenly cold during a great earthquake which, in 1660, threw down several houses in that town.

"It has been ascertained that the hot springs of the Pyrenees, the Alps, and many other regions are situated in lines along which the rocks have been rent, and usually where they have been displaced or 'faulted.' Similar dislocations in the solid crust of the earth are generally supposed to have determined the spots where active and extinct volcanoes have burst forth; for several of these often affect a linear arrangement, their position seeming to have been determined by great lines of fissure. Another connecting link between the volcano and the hot spring is recognizable in the great abundance of hot springs in regions where volcanic eruptions still occur from time to time. It is also in the same districts that the waters occasionally attain the boiling temperature, while some of the associated stufas emit steam considerably above the boiling-point. But, in proportion as we recede from the great centres of igneous activity, we find the thermal waters decreasing in frequency and in their average heat, while, at the same time, they are most conspicuous in those territories where, as in Central France or the Eifel in Germany, there are cones and craters still so perfect in their form, and streams of lava bearing such a relation to the depth and shape of the existing valleys, as to indicate that the internal fires have become dormant in comparatively recent times. If there be exceptions to this rule, it is where hot springs are met with in parts of the Alps and Pyrenees which have been violently convulsed by modern earthquakes.

"To pursue still further our comparison between the hot spring and the volcano, we may regard the water of the spring as representing those vast clouds of aqueous vapor which are copiously evolved for days, sometimes for weeks, in succession from craters during an eruption. But we shall, perhaps, be asked, whether, when we contrast the work done by the two agents in question, there is not a marked failure of analogy in one respect—namely, a want, in the case of the hot spring, of power to raise from great depths in the earth voluminous masses of solid matter corresponding to the heaps of scorise and streams of lava which the volcano pours out on the surface. To one who urges such an objection it may be said that the quantity of solid as well as gaseous matter transferred by springs from the interior of the earth to its surface is far more considerable than is commonly imagined. The thermal waters of Bath are far from being conspicuous among European hot springs for the quantity of mineral matter contained in them in proportion to the water which acts as a solvent; yet Professor Ramsay has calculated that, if the sulphates of lime and soda, and the chlorides of sodium and magnesium, and the other mineral ingredients which they contain, were solidified, they would form in one year a square column nine feet in diameter, and no less than 140 feet in height. All this matter is now quietly conveyed by a stream of limpid water, in an invisible form, to the Avon, and by the Avon to the sea; but if, instead of being thus removed, it were deposited around the orifice of eruption, like the siliceous layers which

encrust the circular basis of an Icelandic geyser, we should soon see a considerable cone built up, with a crater in the middle; and, if the action of the spring were intermittent, so that ten or twenty years should elapse between the periods when solid matter was emitted, or (say) an interval of three centuries, as in the case of Vesuvius between 1306 and 1631, the discharge would be on so grand a scale as to afford no mean object of comparison with the intermittent outpourings of a volcano.

"Dr. Daubeny, after devoting a month to the analysis of the Bath waters in 1833, ascertained that the daily evolution of nitrogen gas amounted to no less than 250 cubic feet in volume. This gas, he remarks, is not only characteristic of hot springs, but is largely disengaged from volcanic craters during eruptions. In both cases he suggests that the nitrogen may be derived from atmospheric air, which is always dissolved in rain-water, and which, when this water penetrates the earth's crust, must be carried down to great depths, so as to reach the heated interior. When there, it may be subjected to deoxidating processes, so that the nitrogen, being left in a free state, may be driven upwards by the expansive force of heat and steam, or by hydrostatic pressure. This theory has been very generally adopted, as best accounting for the constant disengagement of large bodies of nitrogen, even where the rocks through which the spring rises are crystalline and unfossiliferous. It will, however, of course be admitted, as Prof. Bischoff has pointed out, that in some places organic matter has supplied a large part of the nitrogen evolved.

"Carbonic-acid gas is another of the volatilized substances discharged by the Bath waters. Dr. Gustav Bischoff, in the new edition of his valuable work on chemical and physical geology, when speaking of the exhalations of this gas, remarks that they are of universal occurrence, and that they originate at great depths, becoming more abundant the deeper we penetrate. He also observes that, when the silicates which enter so largely into the composition of the oldest rocks are percolated by this gas, they must be continually decomposed, and the carbonates formed by the new combinations thence arising must often augment the volume of the altered rocks. This increase of bulk, he says, must sometimes give rise to a mechanical force of expansion capable of uplifting the incumbent crust of earth; and the same force may act laterally so as to compress, dislocate, and tilt the strata on each side of a mass in which the new chemical changes are developed. The calculations made by this eminent German chemist of the exact amount of distension which the origin of the new mineral products may cause, by adding to the volume of the rocks, deserve the attention of geologists, as affording them aid in explaining those reiterated oscillations of level—those risings and sinkings of land—which have occurred on so grand a scale at successive periods of the past. There are probably many distinct causes of such upward, downward and lateral movements, and any new suggestion on this head is most welcome; but I believe the expansion and contraction of solid rocks, when they are alternately heated and cooled, and the fusion and subsequent consolidation of mineral masses, will continue to rank, as heretofore, as the most influential causes of such movements.

"The temperature of the Bath waters varies in the different springs

from 117° to 120° F. This, as before stated, is exceptionally high, when we duly allow for the great distance of Bath from the nearest region of active or recently-extinct volcanoes and of violent earthquakes. The hot springs of Aix-la-Chapelle have a much higher temperature—viz., 135° F., but they are situated within forty miles of those cones and lava-streams of the Eifel which, though they may have spent their force ages before the earliest records of history, belong, nevertheless, to the most modern geological period. Bath is about 400 miles distant from the same part of Germany, and 440 from Auvergne—another volcanic region, the latest eruptions of which were geologically coeval with those of the Eifel. When these two regions in France and Germany were the theatres of frequent convulsions, we may well suppose that England was often more rudely shaken than now; and such shocks as that of October last, the sound and rocking motion of which caused so great a sensation as it traversed the southern part of the island, and seems to have been particularly violent in Hertfordshire, may be only a languid reminder to us of a force of which the energy has been gradually dying out. * * *

"If we adopt the theory already alluded to—that nitrogen is derived from the deoxidation of atmospheric air carried down by rain-water—we may imagine the supply of this water to be furnished by some mountainous region, perhaps a distant one, and that it descends through rents or porous rocks till it encounters some mass of heated matter by which it is converted into steam and then driven upwards through a fissure. In its downward passage the water may derive its sulphate of lime, chloride of calcium, and other substances from the decomposition of the gypseous, saline, calcareous, and other constituents of the rocks which it permeates. The greater part of the ingredients are common to sea-water, and might suggest the theory of a marine origin; but the analysis of the Bath springs by Merck and Galloway shows that the relative proportion of the solid matter is far from agreeing with that of the sea, the chloride of magnesium being absolutely in excess—that is, 14 grains of it per gallon for 12 of common salt; whereas, in sea water, there are 27 grains of common salt, or chloride of sodium, to 4 of the chloride of magnesium. That some mineral springs, however, may derive an inexhaustible supply, through rents and porous rocks, from the leaky bed of the ocean, is by no means an unreasonable theory, especially if we believe that the contiguity of nearly all the active volcanoes to the sea is connected with the access of salt water to the subterranean foci of volcanic heat."

"Professor Bunsen, of Heidelberg, led the way, in 1860, in the application of the spectrum analysis to the hot waters of Baden-Baden and of Dürkheim in the Palatinate. He observed in the spectrum some colored lines of which he could not interpret the meaning, and was determined not to rest until he had found out what they meant. This was no easy task, for it was necessary to evaporate fifty tons of water to obtain 200 grains of what proved to be two new metals. Taken together, their proportion to the water was only as one to three million. He named the first *cæsium*, from the bluish-grey lines which presented in the spectrum; and the second *rubidium*, from its two red lines. Since these successful experiments were made, thallium, so called from its green line, was discovered in 1861 by Mr. Crookes; and a fourth metal named *indium*, from its indigo-colored band, was

detected by Prof. Richter, of Freiberg, in Saxony, in a piece of zinc ore of the Hartz. It is impossible not to suspect that the wonderful efficacy of some mineral springs, both cold and thermal, in curing diseases, which no artificially prepared waters have as yet been able to rival, may be connected with the presence of one or more of these elementary bodies previously unknown; and some of the newly-found ingredients, when procured in larger quantities, may furnish medical science with means of combating diseases which have hitherto baffled all human skill."

BANTINGISM AND STIMULANTS.—A friend has suggested to us that in our notice of Bantingism in the last JOURNAL but one, we did not remark as pointedly as we might upon the free use of stimulants recommended by the reduced fat gentleman. He recommends two or three glasses of good claret, sherry or Madeira at dinner, a glass or two of claret at supper, a tumbler of grog made with gin, whiskey or brandy, or a glass or two of claret or sherry for a night-cap, to say nothing of softening the rusk at tea with a tablespoonful of spirit; and then in the morning, on rising, a tablespoonful of a "special corrective cordial," which he calls the Balm of Life! Now this is pretty copious libation for an ascetic; and as it is barely possible that some of the numerous victims of obesity who are now trying on Mr. Banting's course of self-denial may be such literalists as to think they must drink just this amount of these fluids, and thus may be led unwittingly into a habit of positive tippling which they had never before practised, we hasten to assure them that it is by no means an important part of the system. However it may answer in England, where the habits of the people and the nature of the climate make the free use of stimulants a comparatively innocent thing, it is very certain, that with the majority of our people here the "list of drinks" recommended by Mr. B. would, if faithfully imbibed day by day, end in confirmed habits of excessive stimulation. If alcohol in all its forms is food, as some contend, and food of a highly carbonaceous character too, its free use could only tend also to intercept that blissful deliquescence, so longed for by Mr. Banting and his followers, whose sighs for diminution were long ago so touchingly put into language by the Prince of Denmark when he exclaimed,—

"O that this too, too solid flesh would melt,
Thaw, and resolve itself into a dew!"

One word more of explanation. In quoting from Mr. Banting, we printed the expression "those beans, such as milk, sugar, beer, butter, &c." In other places in his pamphlet he calls these articles "human beans"! Now we have heard before of a human *squash* (as in the case of the young lady who suddenly found herself in the presence of one of the vegetable monsters of this species at an Agricultural Exhibition, and raising her hands with wonder, exclaimed, "can this be a human squash!")—but we must confess the expression "human beans" is calculated to mystify the uninitiated. It is a little figure of speech of the philosophical Mr. Banting. The articles of food referred to he compares, in their effects on adults, to those caused by beans when given to a horse—good things perhaps in youth, but in adult life "detrimental as a constancy." Such food, he says,

he shall call from analogy "human beans." We must say we are not much struck with the appropriateness of the figure as applied to solid-producing articles of diet.

Dr. WM. M. CORNELL, formerly of this city, has been appointed an Examining Surgeon for Pensions in Philadelphia, and has also received the appointment of Professor of Anatomy, Physiology and Hygiene in the Western University of Pennsylvania.

Surgeon Henry Jancs, U. S. Vols., has been ordered to duty in charge of the General Hospital, Montpelier, Vt.

The Vermont Medical Society will hold its annual session at Montpelier on the 19th and 20th inst. A brief report of the doings of the meeting, from the Recording Secretary, would be thankfully received for insertion in the Journal.

The deaths in Providence, R. I., numbered 118 in September—being 13 less than in September, 1863, but 17 more than the average for September during the preceding nine years. One death from smallpox occurred in Providence in September, the first death from the disease in that city since March, 1862.

The next annual meeting of the Quarantine and Sanitary Convention will be held in Philadelphia on the 27th inst.

VITAL STATISTICS OF BOSTON.
FOR THE WEEK ENDING SATURDAY, OCTOBER 8th, 1864.
DEATHS.

	<i>Males.</i>	<i>Females.</i>	<i>Total.</i>
Deaths during the week	58	61	119
Ave. mortality of corresponding weeks for ten years, 1853—1863,	46.6	42.0	88.6
Average corrected to increased population	00	00	97.4
Death of persons above 90	0	1	1

BOOKS RECEIVED.—The Book of Prescriptions, containing 3000 Prescriptions, collected from the Practice of the most eminent Physicians and Surgeons, &c. By Henry Beasley, Philadelphia: Lindsay & Blakiston.—The Comprehensive Medical Dictionary; containing the Pronunciation, Etymology and Signification of the Terms made use of Medicine and the kindred Sciences, &c. By J. Thomas, M.D. Philadelphia: J. B. Lippincott & Co.—The Functions and Disorders of the Reproductive Organs in Childhood, Youth, Adult Age and Advanced Life, &c. By Wm. Acton, M.R.C.S., &c. Philadelphia: Lindsay & Blakiston.

MARRIED.—In this city, 6th inst., Dr. Henry F. Aten, of Dedham, to Miss Elizabeth W. Mills, of Boston.—In South Boston, 5th inst., Robert Provan, M.D., to Miss Carrie A. Mann, both of South Boston.—At Quincy, 9th inst., T. F. Sumner, M.D., to Miss Henrietta C. Aglar, of Quincy.

DIED.—At New York, 9th inst., Dr. A. B. Snow, Surgeon 1st Corps New York Engineers, for many years a resident of this city.—At Jacksonville, Fla., Aug. 16th, Acting Assistant Surgeon John M. Whitney, of the U. S. Steamship Norwich, formerly of this city, aged 22.

DEATHS IN BOSTON for the week ending Saturday noon, Oct. 8th, 119. Males, 58—Females, 61.—Accident, 4—anaemia, 1—apoplexy, 2—asthma, 1—inflammation of the bowels, 2—disease of the brain, 3—inflammation of the brain, 1—bronchitis, 3—cancer, 3—cholera infantum, 7—consumption, 19—convulsions, 2—croup, 1—diarrhoea, 10—diphtheria, 3—dropsy, 2—dropsy of the brain, 4—dysentery, 2—erysipelas, 1—bilious fever, 1—scarlet fever, 1—typhoid fever, 11—gastritis, 1—disease of the heart, 2—homicide, 1—infantile disease, 4—laryngitis, 1—disease of the liver, 1—congestion of the lungs, 3—inflammation of the lungs, 6—marasmus, 6—old age, 2—paralysis, 1—premature birth, 1—puerperal disease, 1—smallpox, 2—unknown, 3.

Under 5 years of age, 61—between 5 and 20 years, 7—between 20 and 40 years, 21—between 40 and 60 years, 10—above 60 years, 20. Born in the United States, 87—Ireland, 26—other places, 6.